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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,278	10/13/2005	Masakazu Kawai	SAT-16287	1278

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EXAMINER	
MARC, MCDIEUNEL	

ART UNIT	PAPER NUMBER
3664	

MAIL DATE	DELIVERY MODE
07/07/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,278	KAWAI, MASAKAZU	
	Examiner	Art Unit	
	MCDIEUNEL MARC	3664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 May 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-5 are pending.

2. The rejection to claims 1-5 on the ground of nonstatutory obviousness-type double patenting is withdrawn due to approved terminal disclaimer filed on .1/29/2009.

3. The rejection to claims 1-5 under 35 U.S.C. 102(e) as being anticipated by Takenaka et al. (U.S. Pat. No. 6243623) is maintained.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Takenaka et al. (U.S. Pat. No. 6243623).

As per claim 1, Takenaka et al., teaches a robot that includes a method of successively estimating the position of a floor reaction force acting point of each leg of a biped walking mobile body (see figs. 1 and 4), comprising: a first step for successively grasping the position of

the center of gravity of the biped walking mobile body (see fig. 1), the position of the ankle joint of each leg (see figs. 40-43), and the position of the (metatarsophalangeal joint)[1] of the foot of the leg, respectively, and also successively grasping the vertical distance from the ankle joint to a ground contact surface of each leg in contact with the ground while the biped walking mobile body (see figs. 1 and 30) is in motion (see fig. 43, wherein first foot, second foot, first ankle and second ankle have been taken as foot articulation/metatarsophalangeal), a first ground contact sensor (see fig. 30, particularly inclination sensor, yaw-rate sensor) and a second ground contact sensor (see fig. 30, particularly inclination sensor, yaw-rate sensor) being provided on the sole of the foot of each leg of the biped walking mobile body (see fig. 1), and the first and the second ground contact sensors (see fig. 30, particularly inclination sensor, yaw-rate sensor and figs. 1-2, wherein ground sensors 18(R), 20(L) of fig. 1-2, being considered to be in the sole of each foot of the robot by design choice) outputting ground contact detection signals based on whether a place directly below an ankle joint of a leg and a place directly below a metatarsophalangeal joint of the foot of the leg (see fig. 2), respectively, are in contact with the ground (see fig. 2); and a second step wherein, for each leg in contact with the ground while the biped walking mobile body (see fig. 1) is in motion (see fig. 2, wherein the bending angle being considered as a result of motion), the horizontal position of one of the center of gravity, the ankle joint of the leg, and the metatarsophalangeal joint of the leg (see fig. 2 as a whole), the positions thereof having

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[1] The **metatarsophalangeal articulations** are the joints between the metatarsal bones of the foot and the proximal bones (proximal phalanges) of the toes . They are condyloid joints meaning and elliptical or rounded surface (of the metatarsal bones) come close to the shallow cavities (of the proximal phalanges). The ligaments are the plantar and two collateral. The movements permitted in the metatarsophalangeal articulations are flexion, extension, abduction, and adduction

been determined in the first step, is successively estimated selectively as the horizontal position of the floor reaction force acting point of the leg on the basis of at least the combination of contact or no contact with the ground indicated by a ground contact detection signal of the first ground contact sensor (see fig. 30, particularly inclination sensor, yaw-rate sensor and fig. 2) and contact or no contact with the ground indicated by a ground contact detection signal of the second ground contact sensor (see fig. 30, particularly inclination sensor, yaw-rate sensor) of each leg (see figs. 1 and 4-5), and the vertical position of the floor reaction force acting point of the leg is successively estimated as the position apart vertically downward from the ankle joint by the vertical distance from the ankle joint to the ground contact surface of the leg determined in the first step (see fig. 2).

As per claims 2-5, Takenaka et al., teaches a robot wherein when estimating the horizontal position of the floor reaction force acting point in the second step, on each leg in contact with the ground (see fig. 2), if a ground contact detection signal of the first ground contact sensor (see fig. 30, particularly inclination sensor, yaw-rate sensor) of each leg is a signal indicating contact with the ground and a ground contact detection signal of the second ground contact sensor (see fig. 30, particularly inclination sensor, yaw-rate sensor) of the leg is a signal indicating no contact with the ground, then the horizontal position of the ankle joint of the leg is estimated as the horizontal position of a floor reaction force acting point of the leg (see fig. 4), or if a ground contact detection signal of the first ground contact sensor (see fig. 30, particularly inclination sensor, yaw-rate sensor) of each leg is a signal indicating no contact with the ground and a ground contact detection signal of the second ground contact sensor (see fig. 30, particularly inclination sensor, yaw-rate sensor) of the leg is a signal indicating contact with

the ground (see fig. 2), or if ground contact detection signals of both the first ground contact sensor (see fig. 30, particularly inclination sensor, yaw-rate sensor) and the second ground contact sensor (see fig. 30, particularly inclination sensor, yaw-rate sensor) of each leg are signals indicating contact with the ground and if the position of the center of gravity is behind the position of the ankle joint of the leg in the advancing direction of the biped walking mobile body (see fig. 1), then the horizontal position of the ankle joint of the leg is estimated as the horizontal position of the floor reaction force acting point of the leg (see fig. 4); and teaches a robot wherein the vertical distance from the ankle joint to a ground contact surface of each leg when the biped walking mobile body (see fig. 1) is in an upright stationary state is measured and retained in a memory beforehand (see fig. 3), and when grasping the vertical distance from the ankle joint to the ground contact surface of each leg in contact with the ground in the first step (see fig. 30), the vertical distance retained in the memory is grasped as the vertical distance from the ankle joint to the ground contact surface of each leg in contact with the ground (see fig. 2); if the position of the center of gravity is before the position of the metatarsophalangeal joint of the leg in the advancing direction of the biped walking mobile body (see fig. 2, wherein the dot has been considered as center for gravity); a step for successively grasping the inclination angle of each rigid corresponding part of a biped walking mobile body (see fig. 1) that corresponds to each rigid body of a rigid link model representing the biped walking mobile body (see fig. 1) in the form of a link assembly of a plurality of rigid bodies (see fig. 1), the acceleration of the center of gravity of the rigid corresponding part and the angular acceleration of the rigid corresponding part, weight and size of each rigid corresponding part that have been determined in advance (see fig. 18, wherein weight and size fall under design choice), the position of the

center of gravity of each rigid corresponding part in the rigid corresponding part that has been determined in advance, and the inertial moment of each rigid corresponding part that has been determined in advance (see col. 17).

Response to Arguments

6. As to the reference not teaching any ground sensor (Takenaka's ground sensors 18(R), 20(L) in figs. 1-2);

As to the reference not teaching "a first ground contact sensor and a second ground contact sensor being provided on the sole of the foot of each leg of the biped walking mobile body." (Takenaka's ground sensors 18(R), 20(L) of fig. 1-2, being considered to be in the sole of each foot of the robot by design choice);

7. Applicant's arguments filed 5/13/2009 have been fully considered but they are not persuasive.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MCDIEUNEL MARC whose telephone number is (571)272-6964. The examiner can normally be reached on 6:30-5:00 Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Khoi Tran can be reached on (571) 272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/McDieunel Marc/
Examiner, Art Unit 3664
July 04, 2009
/KHOI TRAN/
Supervisory Patent Examiner, Art Unit 3664